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11/590,183

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JUN ZHAI, RICHARD C. BLISH II, and  
FEI WANG

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Appeal 2011-007472  
Application 11/590,183  
Technology Center 2800

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Before RICHARD TORCZON, JOHN G. NEW, and HUNG H. BUI,  
*Administrative Patent Judges.*

BUI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants<sup>1</sup> seek our review under 35 U.S.C. § 134(a) of the Examiner's final rejection of claims 12-20.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.<sup>3</sup>

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<sup>1</sup> The real party of interest is Advanced Micro Devices, Inc.

<sup>2</sup> Claims 1-11 have been withdrawn from consideration and are not on appeal.

<sup>3</sup> Our decision refers to Appellants' Appeal Brief filed July 12, 2010 ("App. Br."); Examiner's Answer mailed November 19, 2010 ("Ans."); Final Office

## STATEMENT OF THE CASE

### *Appellants' Invention*

Appellants' invention relates to reliability characterization of a semiconductor structure. *See Spec.*, p. 1, ll. 5-7. According to Appellants, the semiconductor structure includes an intentional defect with known characteristics (e.g., known location, size, and shape) situated in a dielectric layer to aid in achieving a reliability characterization of the semiconductor structure and providing an accurate prediction of the life of the semiconductor structure. *Id.*, p. 1, ll. 18-20, and Abstract.

### *Claims on Appeal*

Claims 12 and 16 are the independent claims on appeal. Claim 12 is illustrative of Appellants' invention and is reproduced below with disputed limitations emphasized as follows:

12. A semiconductor structure for a reliability characterization, said semiconductor structure comprising:

a dielectric layer situated over a substrate;

*an intentional defect* situated in said dielectric layer, said intentional defect *having a determinable defect propagation rate*;

wherein said *intentional defect aids in achieving said reliability characterization of said semiconductor structure by having said determinable defect propagation rate*.

### *Evidence Considered*

Bonifield et al. (Bonifield)

US 6,967,349 B2

Nov. 22, 2005

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Action mailed October 20, 2009 ("Final Rej."); and the original Specification filed October 31, 2006 ("Spec.").

*Examiner's Rejection*

Claims 12-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Bonifield. Ans. 3-5.

*Issue on Appeal*

Based on Appellants' arguments, the dispositive issue on appeal is whether the Examiner erred in rejecting claims 12-20 under 35 U.S.C. § 102(b) as being anticipated by Bonifield. In particular, the issue turns on whether Bonifield discloses the disputed limitations: "intentional defect having a determinable defect propagation rate" where "said intentional defect aids in achieving said reliability characterization of said semiconductor structure by having said determinable defect propagation rate," as recited in Appellants' independent claims 12 and 16. App. Br. 6-10.

ANALYSIS

The Examiner finds Bonifield discloses a semiconductor structure for a reliability characterization having all elements of Appellants' independent claims 12 and 16. Ans. 3-5 (citing Bonifield, col. 1, ll. 15-18, 55-65; col. 2, ll. 39-43; col. 3, l. 51; and FIG. 2). Appellants acknowledge that Bonifield discloses "a stack of plurality of scatterometry test structures 202 including trench scatterometry test structure 210" to determine measurements of process accuracy and precision to fabricate critical dimensions. App. Br. 8 (citing Bonifield, col. 3, ll. 28-30, and FIG. 2). However, Appellants argue Bonifield does not disclose two features: (1) "an intentional defect having a

determinable defect propagation rate” and (2) wherein “said intentional defect aids in achieving said reliability characterization of said semiconductor structure by having said determinable defect propagation rate,” as recited in Appellants’ independent claims 12 and 16. *Id.* at 9.

We are not persuaded by Appellants’ arguments. We agree with the Examiner that the scatterometry test structure 210 shown in FIG. 2 of Bonifield corresponds to Appellants’ claimed “intentional defect” because the scatterometry test structure 210 similarly performs the function of achieving a reliability characterization of a semiconductor structure by having a determinable diffraction, scattering rate, expansion, or shrinkage rate in periodic scatterometry test. Ans. 6-7 (citing Bonifield, col. 2, ll. 30-33, 41-43). In addition, we note that Appellants’ Specification does not explicitly define the claim term “determinable defect propagation rate” or “intentional defect” as recited in Appellants’ independent claims 12 and 16. In the absence of such an explicit definition, the Examiner may adopt the broadest reasonable definition of the term consistent with the Specification. *In re Morris*, 127 F.3d 1048, 1053-54 (Fed. Cir. 1997).

In the instant appeal, the Examiner has construed the term “determinable defect propagation rate” as encompassing a determinable light diffraction or scattering rate of different materials on a semiconductor structure, or alternatively, a shrinkage or expansion rate of different materials in different operation conditions (i.e., variation of temperature or pressure) in terms of critical dimension or size. *Id.*, 6-7 (citing Bonifield, col. 1, ll. 33-36; col. 2, ll. 48-53 0-33, 41-43). We find the Examiner’s broad interpretation of Appellants’ claimed “determinable defect propagation rate”

reasonable and consistent with Appellants' own Specification, noting that the defect propagation rate is not a structural part of the intentional defect, i.e., test structure, but is rather an intended result (measurement) of a reliability characterization of such a semiconductor structure, i.e., a use of known characteristics of an intentional defect such as known location, size, and shape to determine a rate at which a defect can propagate in such a semiconductor structure. *See Appellants' Spec.*, p. 10, ll. 1-7.

Appellants have not provided use with sufficient reason to disturb the Examiner's claim construction and factual findings regarding Bonifield, which are supported by a preponderance of evidence.

For the reasons set forth above, we find no reversible error in the Examiner's position and, as such, sustain the Examiner's anticipation rejection of independent claims 12 and 16 based on Bonifield.

With respect to dependent claims 13-15 and 17-20, Appellants present no separate patentability arguments. For the same reasons discussed, we also sustain the Examiner's rejection of claims 13-15 and 17-20.

## CONCLUSION

On the record before us, we conclude that the Examiner has not erred in rejecting claims 12-20 under 35 U.S.C. § 102(b) as being anticipated by Bonifield.

## DECISION

As such, we AFFIRM the Examiner's final rejection of claims 12-20.

Appeal 2011-007472  
Application 11/590,183

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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